

AMENDMENTS

This listing of claims replaces all prior versions and listings of claims in the application.

IN THE CLAIMS

1-586. (canceled)

587. (currently amended) A process for the polymerization of one or more monomers consisting essentially of olefins and functional group containing olefins, comprising the step of contacting, at a temperature of about -100°C to about $+200^{\circ}\text{C}$, said one or more monomers with a catalyst composition comprising a transition metal and a bidentate ligand coordinated in a square planar configuration, wherein the ligand and the transition metal are coordinated through two different nitrogen atoms, or through a nitrogen atom and a phosphorous atom, the coordinated nitrogen atoms and phosphorous atoms being part of the ligand, and wherein the ligand has sufficient steric bulk on both sides of the coordination plane to permit formation of a polymer of said one or more olefins with a degree of polymerization of at least about 10 or more.

588. (previously presented) The process of claim 587, wherein said one or more olefins consist essentially of ethylene such that an ethylene homopolymer is produced.

589. (previously presented) The process of claim 587, wherein said one or more olefins consist essentially of ethylene and a compound of the formula $\text{CH}_2=\text{CH}(\text{CH}_2)_m\text{CO}_2\text{R}^1$, wherein R^1 is hydrogen, hydrocarbyl or substituted

hydrocarbyl, and m is 0 or an integer of from 1 to 16, such that a copolymer of ethylene and said compound is produced.

- 590. (previously presented)** The process of claim 587, wherein the transition metal is in a positive oxidation state.
- 591. (previously presented)** The process of claim 587, wherein the transition metal has a d8 electronic configuration.
- 592. (previously presented)** The process of claim 587, wherein the transition metal is nickel, cobalt, iron or palladium.
- 593. (previously presented)** The process of claim 592, wherein the transition metal is nickel or palladium.
- 594. (previously presented)** The process of claim 593, wherein the transition metal is nickel.
- 595. (previously presented)** The process of claim 587, wherein the transition metal has further bonded to it a group Q, a group S or both, in an amount equal to the oxidation state of the transition metal, wherein Q and S are independently an alkyl, halide, chloride, iodide or bromide.
- 596. (previously presented)** The process of claim 587, wherein the transition metal has an oxidation state of 2.

- 597. (previously presented)** The process of claim 595, wherein said catalyst composition further comprises a compound W, which is a neutral Lewis acid capable of abstracting either Q^- or S^- to form WQ^- or WS^- , provided that the anion formed is a weakly coordinating anion; or a cationic Lewis or Bronsted acid whose counterion is a weakly coordinating anion.
- 598. (previously presented)** The process of claim 597, wherein the compound W is further capable of transferring a hydride or alkyl group to the transition metal.
- 599. (previously presented)** The process of claim 587, wherein the catalyst composition further comprises an alkyl aluminum compound.
- 600. (previously presented)** The process of claim 587, wherein the transition metal has bonded to it another ligand that may be displaced by said olefin or may add to said olefin.
- 601. (previously presented)** The process of claim 587, wherein the bidentate ligand is an α -diimine.
- 602. (previously presented)** The process of claim 587, wherein the catalyst is supported on a solid support.
- 603. (previously presented)** The process of claim 587, wherein said catalyst composition is adapted for the polymerization of ethylene.

- 604. (previously presented)** The process of claim 603, wherein the transition metal has further bonded to it a group Q, a group S or both, in an amount equal to the oxidation state of the transition metal, wherein Q and S are independently an alkyl, halide, chloride, iodide or bromide.
- 605. (previously presented)** The process of claim 604, wherein the catalyst further comprises a compound W, which is a neutral Lewis acid capable of abstracting either Q^- or S^- to form WQ^- or WS^- , provided that the anion formed is a weakly coordinating anion; or a cationic Lewis or Bronsted acid whose counterion is a weakly coordinating anion.
- 606. (previously presented)** The process of claim 605, wherein the compound W is further capable of transferring a hydride or alkyl group to the transition metal.
- 607. (previously presented)** The process of claim 601, wherein the transition metal has further bonded to it a group Q, a group S or both, in an amount equal to the oxidation state of the transition metal, wherein Q and S are independently an alkyl, halide, chloride, iodide or bromide.
- 608. (previously presented)** The process of claim 602, wherein said catalyst composition further comprises a compound W, which is a neutral Lewis acid capable of abstracting either Q^- or S^- to form WQ^- or WS^- , provided that the anion formed is a weakly coordinating anion; or a cationic Lewis or Bronsted acid whose counterion is a weakly coordinating anion.
- 609. (previously presented)** The process of claim 608, wherein the compound W is further capable of transferring a hydride or alkyl group to the transition metal.

- 610. (previously presented)** The process of claim 594, wherein the transition metal has further bonded to it a group Q, a group S or both, in an amount equal to the oxidation state of the transition metal, wherein Q and S are independently an alkyl, halide, chloride, iodide or bromide.
- 611. (previously presented)** The process of claim 610, wherein the catalyst further comprises a compound W, which is a neutral Lewis acid capable of abstracting either Q^- or S^- to form WQ^- or WS^- , provided that the anion formed is a weakly coordinating anion; or a cationic Lewis or Bronsted acid whose counterion is a weakly coordinating anion.
- 612. (previously presented)** The process of claim 611, wherein the compound W is further capable of transferring a hydride or alkyl group to the transition metal.